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again and with more care. Though Mr. Sumner has considerable ability in certain lines yet his youth and lack of special training should prevent him from criticising ideas acquired by considerable study and experience. Criticisms should be made with care.

ALBERT SCHNEIDER, M. D.

Weston, Ill., Oct. 26.

SLATE BLACK-BOARDS.

ATTENTION has been called to the fact that light is reflected from slate black-boards in an injurious manner. One city superintendent informs the writer that he has been compelled to lessen the amount of work to be copied from the board. A county superintendent writes that he cannot sit in a certain high school without experiencing painful sensations, if he faces the slate boards.

Have other teachers observed the same? Is a slate board more trying to the eyes than slated surfaces? Is a slated surface to be preferred to a true slate board?

Will not superintendents and teachers who care for the general health of the children in their charge, and especially for the eyesight of the children, communicate with the subscriber in reference to this matter? Answers to the questions are earnestly solicited. Address,

DR. GEO. G. GROFF,

Lewisburgh, Pa.

A GROOVED AXE IN A STRANGE PLACE.

SOME months since while making observations with Mr. Haldeman O'Connor, of Harrisburg, on an island in the Susquehanna, not far from the city, we came across a perpendicular exposure of a clay bed, from the face of which several feet of earth had been removed by a recent flood. Several boulders were imbedded in its face and one of them, *eight feet from the top*, on account of its peculiar shape, attracted attention, and on removal proved to be a grooved axe, well made of a heavy, close-grained sandstone, about six and a half inches long and two and a half inches wide, having a good cutting edge and a perfect groove—somewhat weathered but not differing in any particular from the many found on the surface. The bed in which the implement was found is a compact clay, the lowest and the last of the terrace deposits of the valley and consequently, geologically speaking, comparatively recent.

Any method, save one, to account for the presence of the axe in this position, was of no avail. The clay bed seemed to be unquestionably undisturbed, and no theory of trap roots nor upturning of trees would explain it. Did the axe find this resting place—eight feet below the surface—during the deposit of the bed? If it did its maker, whoever he was, must have lived about the same time,—some thousands of years ago, when the last of the prehistoric floods swept down this old valley, and the origin of Neolithic man, if such he was, must be placed at an early date.

HARVEY B. BASHORE.

West Fairview, Pa., Oct. 1.

THE SYSTEMATIC POSITION OF THE DIPTERA.

IN *Science* No. 558 for October 13, Dr. Packard has an article upon this subject, in the general conclusions of which I most heartily agree. Dr. Packard has not mentioned, by any means, all of the arguments in favor of his view, and some of these will be, I hope, presented by Dr. Riley, who has already suggested them in lectures, although they are not, so far as I am aware, published. There are a few points upon which Dr. Packard's paper is not entirely clear, or where, at least, I do not seem to be able to understand him entirely. He mentions, in one place, as characteristic of the Diptera the "abolition of mandibles (Simulium excepted)." In another place, the fact that the jaws are wanting, and finally speaks of the

mosquito, especially the female, in which mandibles and maxillæ are said to be well developed. The first statements are correct; but I must take issue with Dr. Packard on the statement that the mandibles are well developed in the mosquito, for, as a matter of fact, there is no trace of these organs in that insect. All the piercing and enveloping structures are, as I have shown, homologous with other mouth structures. It is further stated that the maxillæ are usually much reduced, while the labium is enormously developed and highly modified. I have, I think, shown very conclusively that the enormous development in the Dipterous mouth parts takes place in the maxillary structures and that the labium is in most cases very much reduced if not entirely wanting. The best development of this latter organ is seen in the piercing flies related to *Tabanus*, in which we are able to trace every part of the normal structure of the labium of a mandibulate insect. Dr. Packard's article reads as if he partially accepted and partially rejected my conclusions concerning the mouth structures of the Diptera, and I would be rather interested to know how far he considers my conclusions in that order well founded. The reference to the mouth parts is really not needed in order to support his claim, and in some directions the Dipterous mouth is certainly very much more highly specialized than that of the Hymenoptera.

JOHN B. SMITH,

Rutgers College, November 1st.

BOOK-REVIEWS.

A Guide to Stereochemistry, based on lectures delivered at Cornell University, with an index to the literature. By ARNOLD EILOART, Ph.D., B.Sc. New York, Alexander Wilson, 26 Delancey street. 96 p. with appendix, paper, 8vo., Ill. \$1.00, postage free.

THE want of a suitable text-book upon this deeply interesting new branch of chemistry, the geometrical relations of atoms in space, has long been felt. The literature is widely scattered and so fragmentary as to make such a "Guide" as this offered by Dr. Eiloart of utmost value to student and professor alike; to the latter as an aid in the preparation of his lectures and to the former as a digest of these lectures, with an indication of the lines and means for more extended study. Unfortunately, in many colleges this department of research is barely touched upon, not for lack of interest, however, but because with the limited time commonly at the disposal of the professor detailed correlation even of the work in this field is an impossibility.

While the study of structural isomerism dates from 1824, the actual development of stereochemistry begins about 1873—a retardation of extraordinary length, considering the easy step from one to the other. Isomerism conceives of compounds containing the same elements in the same proportions, and yet differing in properties, this difference being due to a different grouping of these elements. Geometrical isomerism conceives of compounds containing the same elements in the same proportions and arranged in the same groups and yet differing in properties because of a different arrangement in space of the constituent groups. The second conception is thus a natural outgrowth from the first. Dr. Eiloart passes with a few words the accepted facts of stereochemistry giving more particular attention to the living issues and more daring developments. The index to the literature is most carefully planned and is more than a mere list of titles, inasmuch as it gives by means of suitable abbreviations an idea of the contents of the papers referred to. An appendix with photographic plates, five in number, treats of the use of "Solid Formulæ," or models in the teaching of organic chemistry. The book is copiously illustrated throughout with diagrams and woodcuts.

C. P.